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ABSTRACT

A review of research linking elementary principal "antecedents" (defined as traits), behaviors, school conditions, and student outcomes furnishes few supportable generalizations. The studies relating principal antecedents with behavior and principal antecedents with organizational variables reveals that the trait theory of leadership has fared badly in studies of elementary school principals. Perhaps the safest generalization yielded by the review draws a connection between principal behavior (such as leadership style) and organizational variables (such as school climate, teacher performance, or school innovativeness), specifically, between elementary school principal leadership style and school innovativeness. Although contingency studies relating situational variables and principal behavior are still in infancy, the findings so far justify a continuance of this line of investigation. Perhaps the highest research priority should be accorded to the links among principal effectiveness, organizational variables (or conditions), and student outcomes. Yet it is important to remember that the principal's task is not to bring about these organizational conditions singlehandedly but to lead others to bring about these conditions and that the definition of effectiveness is multidimensional. Lengthy tables in the appendices summarize the important components of the studies reviewed. (Author/JM)

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Elementary School Principal Effectiveness *

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In a memorable, if less than elegant remark, James G. March (1978) has said that "changing education by changing educational administration is like changing the course of the Mississippi by spitting into the Allegheny (p. 219)." This review is germane to March's gloomy assessment of the consequentiality of school administrators, having as its subject the genre of research in educational administration known as school principal effectiveness. The work being reviewed concerns relationships among principal antecedents, principal behavior, and effectiveness variables and has a parallel in the body of research on teacher effectiveness represented by the work of Gage (1978), Rosenshine (1971), and Brophy & Evertson (1974).

Three criteria were employed in selecting studies for review. A criterion of recency was imposed by restricting the review to articles and dissertations published since 1964 and to books and monographs published since 1960. Secondly, the review considers only studies of elementary school principals. Most investigators of principal effectiveness have used elementary school principals as subjects; hence, few studies were lost by excluding secondary school principals, and the hazards of generalizing across the two populations were avoided. (In the interest of brevity, however, the term *principals* will be used throughout the review to refer to elementary school principals.) Finally, all investigations of principals not directly related to elements of the guiding paradigm for the review, to be introduced subsequently, were excluded.

Persistent Problems In Research on Principal Effectiveness

Two problems, one conceptual and one methodological, have plagued investigators of principal effectiveness. The conceptual problem is

that of the appropriate nature of effectiveness criteria, and the methodological problem derives from practical prohibitions against strong research designs.

The Problem of Principal Effectiveness Criteria. Effectiveness, a term which enjoys universal approbation, is fraught with conceptual complexity when it refers to principal performance. This complexity stems from the problem of definitions of school effectiveness compounded by the issue of principal role definition. That is, a comprehensive treatment of principal effectiveness requires a consideration of conceptions of school effectiveness and how principals are expected to influence school effectiveness.

Appropriate conceptions of organizational effectiveness have been the subject of considerable debate among organizational theorists, with productivity, organizational survival, and capacity to command resources from the environment being offered as alternatives (Katz and Kahn, 1978). Thus, school effectiveness might be judged either on the basis of student achievement, power to hold students in the face of options available to them, or indices of community financial support.

Discussions of principal role in school effectiveness center on whether it is one of an indirect of direct contributor. Those who insist that the principal be regarded as a direct contributor to school effectiveness look ultimately to measures of *school* effectiveness (i.e. student achievement) as indicators of *principal* effectiveness. They are interested in organizational variables such as teacher morale and school climate, not so much as ends in themselves, but as possible correlates of school effectiveness (Erickson, 1979; Georgia State Department of Education, 1975; Silver, 1979).

Advocates of an indirect role view the principal's contribution to school effectiveness as being analogous to the hospital administrator's contribution to the curing of illness. The hospital administrator certainly must see that certain conditions exist in the hospital in order that effective medical practice take place, but variances in patient recovery and comfort are so strongly related to the state of medical technology and the skills of health care professionals that it is unlikely that there would be a detectable relationship between hospital administrator performance and patient outcomes. Analogously, it might be said that a principal's role is to see to it that conditions under his control are such that effective teaching takes place, but variances in student learning are so strongly related to the state of teaching technology and teacher skill that it is not reasonable to assume a palpable relationship between principal performance and student learning. This point of view is presented by A. Brown (1967) (who does not use the hospital administrator analogy) when he labels notions of linking principal performance to student learning "the cognitive fallacy." Proponents of the role of principal as indirect contributor look toward indices of organizational functioning such as teacher morale, school climate, school innovativeness, and the existence of certain structures and procedures as criteria of principal effectiveness.

Figure 1 presents examples of indices of principal effectiveness stemming from alternative conceptions of school effectiveness and principal role. Criteria used in research on principal effectiveness have not mirrored the conceptual complexity illustrated in Figure 1. Rather, the research has concentrated on productivity criteria, either criteria such as student learning, stemming from a view of the principal as a direct contributor to school effectiveness, or criteria such as teacher morale and school climate, deriving from an indirect

Principal Role in School Effectiveness			School Effectiveness Conceptions		
			Productivity	Survival	Community Financial Support
	Direct	Concentrating on Outcomes	Student learning	Enrollment	Results of vote in school attendance area on bond issue
	Indirect	Concentrating on Organizational variables	Teacher morale, school innovativeness, organizational climate	Existence of procedures for assessing student needs and interests and existence of "responsive programs"	Existence of school structures to promote community financial support

FIGURE 1. Examples of Indices of Principal Effectiveness Based on Alternative Conceptions of School Effectiveness and Principal Role

view. There has also been considerable research interest in the relationship between the two types of criteria (i.e. between organizational climate and student learning). Conceptions of school effectiveness as survival or acquiring community support have not been used in research on principal performance, a condition which could change with alterations in political and economic arrangements surrounding schools.

A final perspective on the issue of principal effectiveness criteria accepts a reputational approach and relies upon judgments of those who are acquainted with the principal's performance. In this view, a principal is effective to the degree that teachers, students, parents, or others say the principal is effective. These judgments may be rendered on rating scales, or they may be global assessments, as when principals are nominated and elected as "outstanding" or "successful" by a panel of judges. The paradigm guiding this review recognizes all three categories of criteria commonly employed in investigations of principal performance - organizational variables, student outcomes, and reputation.

Methodological Problems. Major methodological problems in research on principal effectiveness derive from practical prohibitions against strong research designs. Random assignment of principals to schools and experimental manipulations of teachers and students are not possible. Researchers have been compelled to study principals where they find them, and their designs have consequently been associational. Correlation and regression coefficients are the most common statistical expressions in research on principal performance, with their attendant limitations on attributions of causality. Other methodological problems, primarily in the area of measurement, will be discussed at appropriate

points in the review.

Plan of the Review

The guiding paradigm for the review is presented in Figure 2. In the panels are names and examples of the five variable categories employed in principal effectiveness research. The arrows indicate the relationships, or links, commonly investigated and the assumed causal directions among the variable categories. This paradigm represents a reconstruction of the logic which appears to have guided the research on principal behavior and effectiveness. There is no claim that researchers have explicity conducted their investigations pursuant to the paradigm, only that it incorporates their implicit and collective assumptions and that it serves well to organize the body of research on principal performance.

The plan of the review will be to proceed down the assumed causal chain beginning with studies in which principal antecedents have been related to behavior variables. There will be one section in the review for each of the following links in the paradigm: antecedents-behavior; antecedents-organizational variables; behavior-organizational variables; organizational variables-student outcomes. All investigations of principal behavior-situation interaction will be grouped for review. Similarly, all studies of principal effectiveness based on reputation will be reviewed together. Although some studies have encompassed more than one link in the review paradigm, such studies will be reviewed segmentally in appropriate sections. Each section will include the following:

1. An introductory discussion of the link.
2. A tabled description of the studies appropriate to the link and

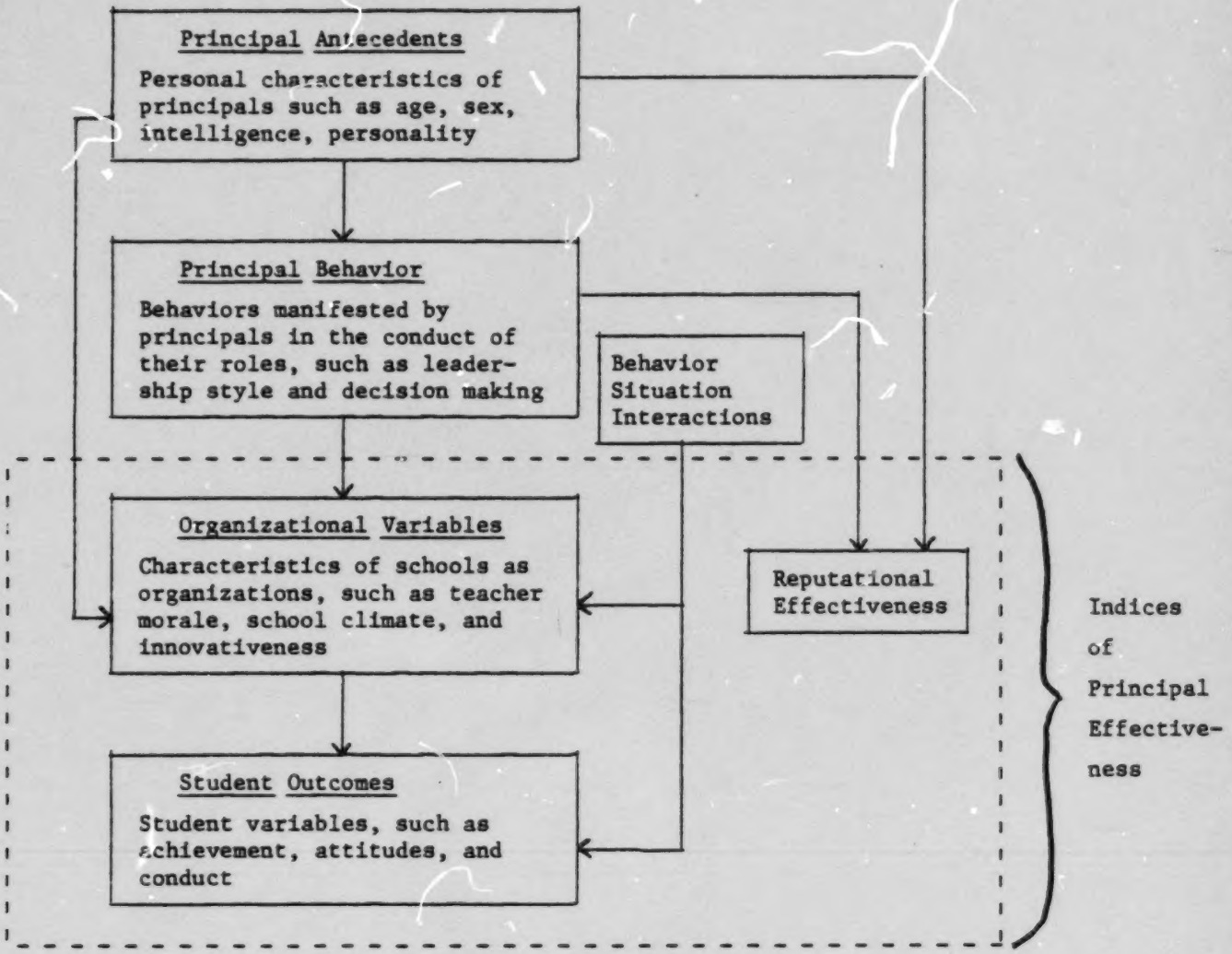
Principal Antecedents
Personal characteristics of principals such as age, sex, intelligence, personality
Principal Behavior
Behaviors manifested by principals in the conduct of their roles, such as leadership style and decision making
Behavior Situation Interactions
Organizational Variables
Characteristics of schools as organizations, such as teacher morale, school climate, and innovativeness
Reputational Effectiveness
Student Outcomes
Student variables, such as achievement, attitudes, and conduct
Indices of Principal Effectiveness

FIGURE 2. Paradigm for Review of Research on Principal Antecedents, Behavior and Effectiveness

evaluative comments on their methodology.

3. Narrative summaries of findings on the link.

4. A judgment regarding generalizations that seem warranted regarding the link.

The evaluation of studies of principal effectiveness present special problems. Because of the previously mentioned prohibitions against strong designs, few, if any, investigations of principal performance could survive standards for experimental studies. It seems preferable to apply standards applicable to associational studies, weight each finding according to the degree of confidence it deserves in reaching generalizations, and acknowledge the tentative nature of those generalizations. Accordingly, in evaluating studies for this review, the assessments will center on questions of representativeness of sample, independence of measurements, and statistical controls for factors which might produce spurious correlations between two variables of interest.

Studies of principals rarely have narrow foci and may employ a number of designs within single studies. This means that more confidence can sometimes be placed in some findings than in others within the same study. For this reason, no over-all judgment regarding research quality will be rendered for each study. Rather, evaluative comments will be presented in the tables and these comments will be used in evaluating the amount of confidence which may be placed in specific findings.

Principal Antecedents - Behavior Relationships

The notion that individuals with different antecedents, or traits, behave differently is time-honored. Some antecedents, such as age, gender, and experience are biographical in nature and susceptible to

direct measurement, while others, such as personality and intelligence, are intrinsic and require indirect measurement. The assumption of a link between these antecedents and behavior is the foundation of most personnel selection procedures; that is, it is assumed that persons with different traits will behave differently in a given position, leading to different consequences for the institution doing the selecting. The validity of such assumptions is critical, and, indeed, has been the subject of recent legal challenges alleging discriminatory hiring practices. With respect to principal performance, what is at issue is the trait theory of leadership (Stogdill, 1974).

While some of the authors of research reviewed in this section assume that the behaviors investigated have face validity as measures of effectiveness, the reviewer does not accept that assumption. Rather, the usefulness of a given behavior is regarded as contingent upon the empirical relationship of that behavior to variables which *are* regarded as indices of effectiveness in the review paradigm.

Descriptions of studies of principal antecedent-behavior relationships are presented in Table 1. These tabled descriptions contain the following elements for each study: author and date of report; the specific antecedent(s) investigated; antecedent instrumentation, if the antecedent was such that standardized tests or inventories were used; the type of principal behavior with which the antecedents were statistically associated; behavior instrumentation; the sample; the findings, each of which is evaluated high (H), moderate (M), or low (L), according to the degree of confidence with which the finding is accepted by the reviewer; and evaluative comments, which suggest reasons for the degree of confidence in the findings. The following are narrative summaries of associations between the various antecedents

and principal behavior.

Principal Gender - Behavior

The relationship between principal gender and behavior is a topic of some social importance in the current era of concern for women and their potential for professional contributions. Of the eleven findings regarding the relationship, five are statistically significant. Statistically significant associations between principal gender and behavior are indicated by one high confidence finding (Gross and Trask, 1976), three moderate confidence findings (Davenport, 1976; Hemphill et al., 1962; Van Meir, 1971), and one low confidence finding (Hoyle and Randall, 1967). Among the seven findings of no significant principal gender-behavior relationships, none were accorded high confidence, four were accorded moderate confidence (Charlier, 1977; Dugan, 1976; Gross and Herriot, 1965; Indelicato, 1977), and three were accorded low confidence (Hemphill et al., 1962[1]; Mangee, 1975; Ringrose, 1977). There is a noticeable consistency in the content of the significant relationships in that all five suggest a more controlling mode of behavior for women principals.

Principal Age/Experience-Behavior

Principal age-behavior and experience-behavior investigations present difficulties because of the correlation between the two antecedents. Unless one is controlled for the other, the relationship of age and experience to behavior can not be determined. Such controls existed in only one of the studies (Bridges, 1965) which were reviewed. For purposes of summary, age and experience variables will be considered together as longevity measures to see if any pattern of association

between longevity and behavior emerges.

The only high confidence finding on the longevity-behavior relationship is by Bridges (1965), who found that experience and personality interacted in their relationship to principals' supervisory behavior and suggested that experience in a large bureaucratic school system may have a leveling effect on principal behavior. Of the five findings of significant linear associations between principal longevity and behavior, four are regarded with moderate confidence (Charlier, 1977; Gross and Herriott, 1965; Hemphill, et al., 1962), and one with low confidence (Hoyle and Randall, 1967). Among the ten findings of no significant principal longevity-behavior relationships are no high confidence findings, seven moderate confidence findings (Charlier, 1977; Dugan, 1967; Gross and Herriott, 1965; Indelicato, 1977), and three low confidence findings (Hemphill et al., 1962; Mangee, 1975). Thus, of the fifteen tests for linear associations between longevity variables and principal behavior found in these investigations, five were statistically significant. The only trend, a faint one, is for principal age to be negatively associated with behavior which might be regarded as positive by subordinates. Two findings (Charlier, 1977 and Hemphill 1962), both accorded moderate confidence, indicated significant negative relationships between principal age and faculty perceptions of principal consideration behavior. A finding also accorded moderate confidence (Gross and Herriott, 1965) reflected a significant negative relationship between principal age and ratings on the Executive Professional Leadership Questionnaire (EPLQ).

Principal Training-Behavior

In Table 1 are nine findings regarding principal training-behavior

relationships. Among these are four statistically significant results (Gross & Herriott, 1965; Hoyle and Randall, 1967; Koch, 1967; Mangee, 1975), all regarded with moderate confidence with the exception of Mangee's low confidence finding. The Gross and Herriott investigation and Koch's replication of that study provide the only clear substantive commonality in finding a significant negative relationship between amount of principal administrative training and ratings by their faculties on the EPLQ. Of the five findings indicating no significant principal training-behavior relationships are three moderate confidence results (Dugan, 1967; Gross & Herriott, 1965; Hemphill, et al., 1962), and two low confidence findings (Hoyle and Randall, 1967; Ringrose, 1977).

Principal Cognitive Ability-Behavior

Both findings regarding principal cognitive ability-behavior relationships were viewed with low confidence. The finding by Hemphill et al. (1962) of a significant positive relationship between principals' performance on ability and knowledge tests and several in-basket test variables is marred by the questionable validity of the in-basket test (Brown, 1967; Cross, 1967). Gross and Herriott's finding (1965) of a significant correlation between principal undergraduate scholarship and the EPLQ score is flawed by the scholarship measure being based on self report.

Principal Personality-Behavior

Four findings regarding principal personality-behavior relationships are included in Table 1. A high confidence finding by Bridges (1965) revealed that dogmatism was significantly associated with the supervisory behavior of less experienced principals but not with the behavior of

a more experienced group.

Three more findings on this topic (Charlier, 1977; Hemphill, et al., 1962; Indelicato, 1977), all accorded moderate confidence, indicated no significant relationship between principal personality and behavior. Although Hemphill, et al. conclude that there "is the appearance of many orderly relationships between personality factors and principal performance" (p. 356), the weak and inconsistent relationships indicated by the relevant matrix of coefficients on page 312 of the work do not support such a statement.

Generalizations Regarding Principal Antecedents - Behavior Relationships

The following generalizations seem supportable.

1. Women principals, as a group, appear to be more controlling in their administrative behavior than men principals.
2. No other principal antecedents bear consistent relationships to role behavior.

Principal Antecedents - Organizational Variables Relationships

There are two lines of reasoning underlying an assumption of a relationship between principal antecedents and organizational variables. One line of reasoning is that principals with different antecedents behave differently and that their behaviors produce variations in organizational variables such as school climate or teacher morale. The other line of reasoning is that students, teachers, and parents react to variations in principal characteristics and these reactions generate differences in organizational variables. Whatever the reasoning, the antecedent-organizational variables relationship has been a popular topic over the past decade, especially among authors of

dissertations. This popularity may be attributable to the invention in the early 1960's of the instrument which has served as the nearly exclusive organizational variable measure, the Organizational Climate Description Questionnaire (OCDQ) (Halpin, 1963). While detailed discussions of the properties of measurement instruments are not normally presented in reviews such as this one, the OCDQ is used in so many studies considered here that a brief digression seems necessary. The OCDQ is purported to measure the personality of a school. To assess school climate the instrument is administered to teachers, who respond on Likert scales to 64 questions regarding the behavior of the principal and the faculty of the school. Scoring yields four measures of faculty behavior - Disengagement, Hindrance, Esprit, and Intimacy - and four measures of principal behavior - Aloofness, Production Emphasis, Thrust, and Consideration. Profiles of schools' mean scores on the eight subscales may be characterized along a closed-open continuum, with the open end assumed to be desirable. The open climate suggests vitality and responsiveness, while a closed climate may be characterized in opposite terms. The epistemological and technical issues related to the OCDQ have been subjected to some discussion, with the instrument receiving both support (Watkins, 1968) and criticism (Hayes, 1973; Note 1). The extensive use of the OCDQ may be educational administration's clearest example of the Law of the Instrument (Kaplan, 1967), and any survey of principal performance will frequently encounter this questionnaire.

Studies of principal antecedent - organizational variables relationships are described in Table 2, with the format of the presentation paralleling that of the previous table. Narrative summaries of relationships between various antecedent types and organizational variables follow.

Principal Gender - Organizational Variables

None of the findings regarding relationships between principal gender and organizational variables were statistically significant. This includes two high confidence findings (Gross & Trask, 1976); four moderate confidence findings (Anderson, 1965; Ernst, 1965; Rice, 1968; Winter, 1968); and four low confidence findings (Esporite, 1971; Farber, 1968; Reitz, 1973; Smith, 1966). Organizational climate was the organizational variable of interest in all of the above findings, except those of Gross & Trask (1976), who examined the relationship of principal gender to teacher performance and morale. These findings, along with those regarding principal gender - behavior relationships, lend support to those who have criticized school district promotion practices which have resulted in a decreasing percentage of women in the principalship (for example, Gross & Trask, 1976). They also make a recent claim by Frasher and Frasher (1979) that educational administration is "a feminine profession" seem premature.

Principal Longevity - Organizational Variables

Thirty-seven findings regarding relationships between principal age/experience and organizational variables appear in Table 2. These findings were in 14 studies, most of which considered more than one longevity variable. Gross & Trask (1976) were the only investigators to use a multivariate analysis. They were also the only ones to consider the relationship of longevity measures to variables other than organizational climate, employing teacher performance and teacher morale as criterion variables.

The 10 findings indicating significant longevity-organizational variables relationships include one high confidence result (Gross &

Trask, 1976), two moderate confidence results (Chaplain, 1976; Kelly, 1972) and 7 low confidence findings (McLeod, 1969; Raspa, 1976; Smith, 1966). Of the 29 findings of no significant relationship between principal longevity and organizational variables three were regarded with high confidence (Gross & Trask, 1976), 10 with moderate confidence (Anderson, 1965; Chaplain, 1976; Ernst, 1965; Tirpak, 1970), and 16 with low confidence (Esporite, 1971; Farber, 1968; Powell, 1976; Raspa, 1976; Reitz, 1973; Smith, 1966). While the number of significant findings is not negligible, the failure of most investigators of the longevity - organizational variables relationships to control for intercorrelations among longevity variables and the absence of interpretable patterns of relationships permit no defensible generalizations concerning the topic.

Principal Training/Education - Organizational Variables

Six findings on principal training/education - organizational variables were reviewed. The training/education measure varied (i.e. level of formal education, number of semester hours in educational administration), but the organizational variable in each finding was organizational climate. A finding reported by Smith (1966), accorded low confidence, revealed a statistically significant negative relationship between amount of principal training in educational administration and the Thrust dimension of the OCDQ, a finding rendered negligible by the finding that training was not significantly related to the other seven OCDQ dimensions. Of the five findings of no significant relationship, those of Ernst (1965) and Chaplain (1976) were viewed with moderate confidence, and those of Powell (1976), Raspa (1976), and Reitz (1973), with low confidence.

Principal Personality - Organizational Variables

With only two exceptions, organizational climate was the organizational variable in the 23 findings regarding principal personality - organizational variables relationships. The popularity of this topic may be attributable to the intuitive appeal of a relationship between principal personality and organizational climate, which is often described as school personality. The relationship, however, has received modest empirical support. Six findings indicate a significant relationship between principal personality and organizational climate, five of them receiving a moderate confidence rating (Anderson, 1965; Bishop, 1971; Ford, 1966; Murphy, 1966; Tirpak, 1970) and one receiving a low confidence rating (Brickman, 1970). Of the 17 findings indicating no significant relationship between principal personality and school organizational climate, one was accorded a high confidence rating (Melnick, 1970), seven were regarded with moderate confidence (Chaplain, 1976; Ernst, 1965; Levy, 1968; Phillips, 1969; Stolz, 1971), and nine were awarded low confidence ratings (Edgecombe, 1968; Esporite, 1971; Farber, 1968; Muhm, 1968; Powell, 1976; Raspa, 1976; Reitz, 1973; Shea, 1970). While the degree of support for a principal personality - school climate relationship is therefore scant, the content of the significant relationships were uniformly in the hypothesized direction; that is, positive principal personality characteristics were associated with open organizational climates.

There were two findings on principal personality - organizational variables relationships in which the OCDQ was not the organizational variable of interest. A moderate confidence finding by Stolz (1971) indicated a significant difference in the authoritarianism scores of principals of schools which were high and low in innovativeness. A low confidence finding by Edgecombe (1968) indicated no relationship

between principal personality and faculty morale.

Generalizations Regarding Principal Antecedents - Organizational Variables Relationships

Because of the dominance of organizational climate as the organizational variable in studies reviewed in this section, generalizations are offered only with respect to antecedents - organizational climate relationships.

1. There is no difference in the organizational climates of schools administered by men and women principals.
2. There is no discernible pattern of relationships between measures of principal longevity and organizational climate.
3. There is no support for a relationship between measures of principal training/education and organizational climate.
4. Principal personality characteristics may be reflected in the organizational climates of their schools, but not sufficiently to have practical importance.

Principal Behavior-Organizational Variables Relationships

Since the function of administration is the direction and control of life in organizations, logic would indicate that the strongest empirical link in the paradigm for this review would be the principal behavior - organizational variables relationship. The principal's function is not the teaching of students but the coordination and leadership of those who do teach students. It is reasonable to assume, then, that this coordinative and leadership behavior would be associated with indicators of organizational functioning and the behavior and attitudes of teachers. As previously stated, some investigators view

these organizational variables as the ultimate indicators of principal effectiveness, regardless of their relationship to measures of student learning, while others consider them as important only to the extent to which they are related to student outcomes.

In Table 3 are descriptions of the 23 studies of principal behavior-organizational variables relationships that were reviewed. Summaries of the findings are organized according to the types of principal behavior considered in the investigations.

Leadership Style - Organizational Variables

Leadership style refers to the characteristic manner in which administrators relate to other organizational members. Standardized instruments purporting to measure principal leadership style (also called administrative style or management style) typically focus on principal relationships with their subordinates and commonly take the form of questionnaires on which teachers mark scales in response to questions about their principals' characteristic behaviors. More often than not, the organizational variables in these studies are also measured by questionnaires completed by the same teachers who reported administrator behavior, making any significant findings a possible artifact of measurement dependency.

In investigations of relationships between principal leadership style and organizational climate, for example, there were a total of seven findings, six of them indicating the existence of a statistically significant relationship, and all of them flawed by measurement dependency (Brickner, 1971; Cook, 1965; Fietler, 1979; Nelson, 1972; Vick, 1975). Indeed, when it is observed that four of the OCDQ subscales measure leader behavior; that the OCDQ and a leadership style instrument to

which it is commonly related, the LBDQ, both contain subscales called Consideration; and that both instruments are commonly completed by an identical group of teachers, it would be surprising if there were no relationships between scores yielded by two such instruments. The results, of course, are tautological and indicate nothing about functional relationships between principal behavior and teacher attitudes or behavior. These investigations, all dissertations, and all accorded low confidence ratings, dramatize well the consequences of the over reliance of doctoral students in educational administration on questionnaire methods, as has been documented and discussed by Haller (1979).

The only investigation of leadership style - organizational climate relationships not marred by measurement dependency (Wiggins, 1972) yielded a moderate confidence finding of no significant relationship.

An analysis of seven findings on relationships between principal leadership style and teacher morale (Johnson, 1978; Pennebaker, 1969; Smith, 1975; Walker, 1975) reveals that while each of these findings was statistically significant, each was also to some degree blemished by measurement dependency. Another study of this relationship, (Moyle, 1979), in which no statistical tests were employed, also has its claims of support for a leadership style-teacher morale relationship weakened by measurement dependency.

The most useful leadership style studies are those concerning the relationship between principal behavior and school innovativeness. Innovativeness, as a criterion, permits measurement by direct methods and has an additional advantage in being generally regarded as a good product. There were five findings on this relationship represented in four studies, with all five findings indicating a significant relationship

between principal leadership style and school adoption of innovations. Among these are one high confidence finding (Appel, 1977), three moderate confidence findings (Green, 1977; Remsen, 1974; Vick, 1975), and one low confidence finding (Remsen, 1974). The consistent direction of these findings and the acceptable methodology behind most of them suggest a relationship between principal leadership style and school innovativeness. Which particular dimension of leadership style accounts for the relationship is not clear, although initiating structure, or task orientation, is significantly associated with innovativeness in the studies by Appel, Green, and Remsen.

Executive Professional Leadership - Organizational Variables

There have been three investigations in which principal behavior as reported by faculties on the Executive Professional Leadership Questionnaire (EPLQ) has been related to organization variables. All findings from these three studies are accorded low confidence because of measurement dependency problems. In the study in which the questionnaire was first developed, Gross and Herriott (1965) found that principal's EPL was significantly correlated with teacher morale, a finding replicated by DeHart (1976). A low confidence finding by Guy (1969), however, revealed no significant relationship between the EPLQ and school organizational climate.

Miscellaneous Principal Behaviors - Organizational Variables

There are insufficient commonalities in variable conceptualization among the remaining findings on principal behavior - organizational variables relationships to justify additional sections. Low confidence findings by Ringrose (1977) and Sidotti (1976), both flawed by

measurement dependency, indicated that principals who relied more on functional forms of authority (i.e. expertise) had better school climates and higher teacher morale than did principals relying more on formal authority. In studies of relationships between principal interpersonal behavior and organizational variables, a high confidence finding by Hagans (1969) indicated significant relationships between principals' scores on certain FIRO-B subscales and their schools' scores on some OCDQ subscales, and a moderate confidence finding by Wiggins (1972) revealed no relationship between the same sets of measures. Finally, there are Dugan's (1967) low confidence finding of significant relationships between principals' communication behavior and the OCDQ, and Mangee's (1975) low confidence finding of no significant difference between the school climates of principals scoring high and low in helping behavior.

Generalizations Concerning Principal Behavior - Organizational Variables

1. Principal leadership style is consistently associated with school adoption of innovations.
2. Investigations of other principal behavior-organization variables relationships are so flawed by measurement dependencies that they can support no generalizations.

Organizational Variables - Student Outcomes

For those who would judge principal effectiveness on the basis of student learning, the organizational variables - student outcomes relationship is the critical link in the paradigm. Only through establishing conditions in the school can a principal expect to influence students, and knowledge of conditions that are related to student learning is therefore the foundation for principal actions to improve

student learning. If student achievement is considered the ultimate criterion of principal effectiveness, then organizational variables are necessarily the mediators between principal behavior and the ultimate criterion.

Descriptions of studies of relationships between organizational variables and student outcomes are presented in Table 4. In these studies, organizational climate again emerges as the most frequently examined organizational variable, usually measured by the OCDQ. The results, however, afford little support for the usefulness of this highly popular instrument.

Since the OCDQ is essentially a measure of teacher affect, it might be expected that scores from the instrument would be related to measures of student affect. Such a relationship was not present however in five findings on the question (Boyd, 1970; Sellinger, 1971; Thayer, 1971; Rooney, 1976), all viewed with moderate confidence.

Climate measures have fared little better as predictors of academic achievement. Results in three investigations indicated a significant relationship between school climate and student achievement, with findings by Brookover (1968), Reilly (1973), and Maxwell (1973) accorded high, moderate, and low confidence, respectively. Reilly's findings are somewhat attenuated by the puzzling direction of the correlations. Non-significant relationships were indicated in six studies, including one high confidence finding (Miller, 1968) and five moderate confidence findings (Crumpton, 1972; Guy, 1969; Madden, 1971; Rice, 1968; Rooney, 1976). It is revealing that the strongest climate - achievement relationships are those reported by Brookover, who found school climate as perceived by students, rather than by teachers, to be the strongest correlate of student achievement.

Only two investigators of organizational variables - student outcomes relationships studied organizational variables other than school climate. Jones (1973) investigated the relationship between school bureaucratization and student attitudes toward school and found virtually no association between the two variables, a finding viewed with moderate confidence. From Project R.O.M.E. (Georgia State Department of Education, 1973) is a low confidence finding of an average correlation of .38 between measures of parent/student/teacher affect and student outcomes.

Generalizations Concerning Organizational Variables - Student Outcomes

1. The OCDQ has been the almost exclusive organizational variable measure used in studies of organizational variable - student outcome relationships.
2. Organizational climate, as perceived by teachers, has so far been found to be generally uncorrelated with either measures of student affect or academic achievement.

Behavior - Situation Interaction Studies

Over the past decade a strand of thought known as contingency theory has developed within the organizational theory literature. Broadly speaking, the contingency theorist is interested in conditions under which relationships between variables are found to exist in organizations. Contingency leadership theory has a rough analogy in aptitude - treatment interaction theory in teaching. Just as the aptitude - treatment theorist is interested in how instructional approaches interact with student aptitudes in producing learning, the contingency leadership theorist is interested in how administrator

behavior interacts with situational variables to produce effects on the organization.

There are three well developed contingency theories of leadership in the general literature - situational favorableness theory (Fiedler, 1967), three dimensional theory (Reddin, 1970) and life cycle theory (Hersey & Blanchard, 1969). Of these, only Fiedler's theory has been used as the framework for studies pertinent to this review. In addition to studies conducted pursuant to Fiedler's concepts, there have been a few investigations performed which have tested hypotheses under less well developed frameworks constructed by authors of dissertations.

In Table 5 are presented descriptions of principal behavior - situation interaction studies. These studies will be summarized in two groups - studies conducted under Fiedler's contingency theory and other situational investigations.

The contingency leadership theory of Fiedler (1967) consists of the following propositions:

1. Each leader is either primarily task oriented or relationship oriented.
2. The orientation of a given leader can be assessed through an analysis of his responses to an instrument called Least Preferred Co-Worker (LPC), which requires the respondent to register his disposition toward his least preferred co-worker on bi-polar scales. Persons who describe their least preferred co-worker favorably (High LPC's) are relationship oriented. Persons who describe their least preferred co-worker unfavorably (low LPC's) are task oriented.
3. Low LPC's are most effective in either extremely favorable or extremely unfavorable leadership situations. High LPC's

are most effective in leadership situations that are moderately favorable.

4. Dimensions of the situation are Group Acceptance (GA), Task Structure (TS) (i.e. task clear or ambiguous), and leader power position (LPP).

Researchers have varied in their interpretation of what is measured by the LPC. While Fiedler regards the instrument as a personality measure, users of the instrument have sometimes assumed it to be a proxy for leadership style. The latter assumption has received support from Hawley (1969) and McNamara (1967), both of whom reported that principals' behavior varied in a fashion predicted by their LPC scores.

Tests of Fiedler's propositions involve the examination of correlations between LPC scores and measures of effectiveness under different conditions of favorableness for the leader. For Fiedler's hypotheses to be supported, leaders' LPC scores must be negatively correlated with measures of effectiveness under highly favorable and highly unfavorable conditions and positively correlated under moderately favorable circumstances. Such patterns of correlations were reflected in high confidence findings by Mellor (1974) and Williams & Hoy (1971). The hypothesized patterns did not appear in moderate confidence findings of McNamara (1967) and McNamara (1968), nor in low confidence findings by Singe (1975).

Inasmuch as leadership effectiveness is a major variable in Fiedler's theory, definitions of effectiveness are particularly critical in investigations conducted pursuant to the theory. Researchers, however, have varied widely in their definitions of effectiveness, and these definitions possess varying degrees of face validity. Mellor's definition of effectiveness as student achievement seems clearly

acceptable, for example, while Singe's use of the Group Behavior Inventory as a measure of leader effectiveness is tenuous.

Two other investigators employed weakly developed situational theories in their investigations. Powers (1976) reported a finding, accorded moderate confidence, indicating that compatibility between principals' and superintendents' use of power bases was related to teachers' job satisfaction and loyalty to principal. Rafalides' (1974) low confidence finding revealed that the relationship of amount of principal helping behavior to teacher satisfaction and morale did not vary with the degree of principal hierarchical influence.

As a result of the review of principal behavior - situation interaction studies the following generalizations are offered:

1. Fiedler's contingency theory of leadership has received limited support from studies of principals.
2. No investigations of principals under other well developed situational theories have been conducted.
3. Researchers who have pursued situational hypotheses regarding principal effectiveness have been confronted with the same effectiveness definition problems as have other investigators of principal performance.

Reputational Effectiveness

The most common assessments of principals are based neither on measures of organizational variables nor on student achievement. They rest, rather, on the experiences which teachers, students, parents, and higher echelon administrators have with principals in the day by day life of schools. Normally, such assessments are informal, and their communication forms the basis of what is called principal reputation.

The authors of studies to be reviewed in this section have captured judgments about principal reputation through various means and have sought to determine what characteristics and behavior distinguish "successful" or "effective" principals from others.

Summaries of reputational studies are presented in Table 6, which differs from previous tables in its omission of evaluative comments. These were omitted because the nature of these studies is such that application of the usual empirical research criteria is not appropriate.

A content analysis of the findings reveals that no biographical characteristic was found to be associated with principal reputational effectiveness in more than one of the six reputational studies. Qualities and/or behavior indicative of interpersonal skill or sensitivity were mentioned as characteristic of successful principals in four of them (Doll, 1970; Goetz, 1973; Goldhammer, 1971; Rejent, 1971); the quality of commitment was mentioned in three of the investigations (Doll, 1970; Goetz, 1973; Goldhammer, 1971); independence from the hierarchy was mentioned in two of them (Doll, 1970; Goldhammer, 1971); and knowledgeability was mentioned by Goetz (1973) and by Rejent (1971).

Generally, the studies add up to little, partly because of their small number and partly because each investigation employed different approaches to success definition. However, the frequency with which effective principals were described as skilled in interpersonal relations and having commitment is worthy of notice.

Discussion

The finding of strong and consistent empirical support for the links in the review paradigm would have permitted generalizations of the type "With certain probabilities, persons possessing antecedent

A exhibit behavior B as elementary school principals, which is related to condition C in schools, which is associated with student outcome D." The foregoing review makes it apparent that no such thread of supportable generalizations runs through the paradigm; indeed the number of supportable generalizations concerning any of the links are few, and those tentative, given the correlative nature of the research which undergirds them.

A link by link analysis of the findings of the review indicates that the empirical ties range in strength from virtually non-existent to modest. A brief summary regarding each link follows.

Findings relative to the antecedents - behavior and antecedents - organizational variables relationships reveal that the trait theory of leadership has fared badly in studies of elementary school principals. While women principals may have a tendency to be more controlling than men in their behavior, and measures of principals' personalities sometimes seem to be reflected in their schools' organizational climates, the evidence indicates that little can be predicted about principal behavior or organizational variables in their schools from a knowledge of principal antecedents. A moratorium on research on elementary school principal antecedents is probably in order, given the unproductive yield of this line of research. A practical implication of the poor predictive capacity of principal antecedents is with regard to principal selection. It seems adviseable for persons who make selection decisions to invent arrangements for candidates for the principalship to be assessed under try-out conditions. The precise nature of these conditions is beyond the scope of this discussion, but how persons will behave as principals may best be predicted by placing them in vestibule positions which closely approximate the principalship and

making rigorous assessments of their performance.

Perhaps the safest generalization yielded by the entire review is within the principal behavior - organizational variables link. There does appear to be a solid empirical connection between elementary school principal leadership style and school innovativeness. Other findings pertinent to this link, however, are from studies so flawed by measurement dependency that they can not be used to support such intuitively apparent relationships as between principal leadership style and various measures of teacher attitude. Let us hope that future investigators of these relationships will diversify their methodology to include direct observation, interviewing, and document analysis, while reducing past dependency on the familiar questionnaires.

The situation - behavior interaction studies are still very much in the infancy stage in educational administration. The findings so far justify a continuance of this line of investigation. It would be useful if situational constructs in addition to those of Fiedler's were investigated.

Perhaps the highest research priority should be accorded to the final link in the paradigm, organizational variables - student outcomes relationships. There is compelling logic in recent appeals (Erickson, 1979; Silver, 1979; Note 2) for more attention to this question. When there is knowledge of the kind of organizational conditions that contribute to student outcomes, then it will be more feasible to determine what principal performances bring about such conditions. Brookover's (1978) investigation suggests that school conditions as seen by students, rather than by teachers, may be key organizational variables. Hence, future investigations might give more attention to relationships among principal behavior, organizational variables as

seen by students, and student learning. Two caveats are warranted, however. One of them is that, even if complete knowledge were acquired regarding relationships between organizational conditions and student outcomes, the principal's chief task would still be to lead other members of the school organization in bringing about those conditions. An important effectiveness criterion for principals would remain the capacity to move the organization. The second caveat is with regard to the contingent nature of effectiveness criteria. As Cameron (1978) has pointed out, effectiveness criteria always represent someone's values and biases, and each criterion has its constituencies, whose membership and power vary with time and place. At one time and place the salient effectiveness criterion for a principal may be to bring about social order; in another to maintain a teaching staff; in another to placate a community; in another to increase reading achievement; in another to correct imbalances in the school program. Programs of research on principal performance can not ignore the multi-dimensional character of effectiveness.

Footnotes

[1]Some authors being identified with findings of both significant and insignificant relationships is attributable to their studying more than one criterion. For the same reason, number of findings and authors are sometimes unequal.

Reference Notes

1. Hayes, A. A reappraisal of the Halpin-Croft model of the organizational climate of schools. Paper presented at the meeting of the American Educational Research Association, New Orlean, 1973.
2. Silver, P. Some needed developments in research for building a "Theory of administrative practice." Paper presented at the meeting of the American Educational Research Association, San Francisco, California, April 11, 1979.

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Table 1

Descriptions of Research on Principal Antecedents - Behavior Relationships

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Bridges (1965)	. Experience . Personality	Rokeach Dogmatism Scale (RDS) (Completed by principals)	Supervisory Behavior	Organization Survey (Factor B only) (Completed by faculties)	28 principals selected as being either extremely high or low on dogmatism from a group of 99 principals from a large city district in the Midwest (14 high and 14 low scorers)	There was interaction between experience and dogmatism in that there was a significant difference in the supervisory behavior of high dogmatism principals and low dogmatism principals of less experience, but no significant difference was found for high dogmatism and low dogmatism principals of more experience. (H)	+ Multivariate analysis used, including control for age of principals.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Charlier (1977)	. Gender . Age . Administrative experience . Personality	· I-E Scale (Locus of control) · Mach V (Maniuplative tendencies) · Least Preferred co-worker (LPC) (all instruments completed by principals)	Leadership style	Leader Behavior Description Questionnaire (LBDQ) (Completed by faculties of subjects)	55 principals from 13 school districts in Southeastern Pennsylvania	. No significant differences in LBDQ scores of men and women. (M) . Significant negative correlation between age and Consideration scale of LBDQ. (M) . No significant relationship between experience and LBDQ. (M) . No significant relationship between any personality measures and LBDQ. (M)	- No controls for dependencies among antecedents. - Possibly biased sample because only 13 of 27 invited districts cooperated in the study.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Davenport (1976)	Gender		Leadership	Leader Behavior Description Questionnaire - Form XII (LBDQ-XII) (Completed by faculties)	56 principals randomly selected from Missouri School Directory (29 male and 28 female)	Female principals scored significantly higher on Production Emphasis, Superior Orientation, Demand Reconciliation, and Representativeness. Male principals scored significantly higher on Tolerance for Freedom. (M)	- Possible sample bias in that only 57 of 80 invited principals participated.
Dugan (1967)	. Gender . Age . Amount of training in educational administration		Communication	Administrative Communication Rating Scale (ACRS) (Completed by faculties)	48 principals in upper New York	No significant relationships between principal gender, age, or training and their scores on the ACRS. (M)	

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Gross & Herriott (1965)	. Gender . Age . Amount of teaching experience . Amount of undergraduate training in education . Amount of training in educational administration.		Efforts to improve professional performance of staff	Executive Professional Leadership Questionnaire (EPLQ) (Completed by faculties)	175 principals in 41 cities with populations over 50,000	. Significant positive association between EPL and undergraduate academic performance. (L) . Significant negative associations between EPL and age, amount of training in educational administration. (M) . Other antecedents not related to EPL. (M)	- Too much reliance on self report for data on principals. + Broad sample.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Gross & Trask (1976)	Gender		. Amount of control exercised over teachers . Stress on obligation of teachers to render service to students . Degree of support for teachers in pupil-teacher conflicts . Social distance from teachers . Social distance from teachers outside school . Involvement of parents in school matters	Sociological Questionnaires completed by subjects, by their faculties and by their administrative superiors, supplemented by interviews	175 principals in 41 cities having populations of over 50,000 in 1960	. Significant third order partial correlation between gender of principal and control over teachers' work with women principals exercising more control. (H) . Men principals maintain significantly greater social distance between themselves and teachers outside school than do women principals. (H) . No significant differences between men and women on other behaviors examined. (H)	+ Multivariate statistical techniques were used. + Broad sample.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Hemphill et al. (1962)	. Gender . Age . Amount of administrative experience . Amount of administrative training . Intelligence . Professional Knowledge . Cultural Knowledge . Personality	. Basic Mental Abilities Test . School Administration and Supervision test, Education In the Elementary School . National Teacher Examination: Education in the Elementary School . National Teacher Examinations in social studies, literature, Arts and Science, Mathematics . 16 Personality Factor (16PF)	. Administrative performance in a simulated elementary school, yielding measures of decision making, administrative style, decision content . Leadership style on-the-job	. In-basket test (simulated performance test taken by subjects). . Principal Behavior Description Questionnaire (PBDQ) (An adaptation of the LBDQ completed by faculties of subjects).	232 principals from 33 school districts in 16 states	. Biographical variables such as gender, age, experience unrelated to the two composite in-basket measures, Preparation for Decision and Amount of Work Done. (L) . Principals who scored high on tests of mental ability and professional knowledge scored significantly higher on the two composite in-basket measures. (L) . Scores on professional knowledge and cultural knowledge tests significantly related to Imaginative and Organizational change content scores of in-basket test. (L)	- No multivariate analyses used. - Validity of in-basket test questionable. + Broad sample.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation Sample	Findings	Evaluative Comments
Hemphill et al. (1962) continued					. Age and experience in administration significantly and negatively related to Consideration scales of PBDQ. (M) . Women principals significantly higher on Initiating Structure scale of PBDQ. (M) . Weak and inconsistent relationships between personality measures and behavior measures, (M) . Other antecedents unrelated to behavior. (M)	

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Hoyle and Randall (1967)	. Gender . Amount of elementary teaching experience . Amount of undergraduate training in elementary education . Amount of graduate training in elementary education		Problem Attack Behavior	. Problem Attack Behavior Inventory (PBAI) (Completed by faculties)	30 elementary school principals in 3 Texas school districts	. Women significantly higher than men on subscales of Problem Recognition and Administrator Evaluation of Decision Results. (L) . Principals with more experience in elementary education significantly higher on all subscales of PBAI:	- No control for dependencies among antecedents. - Narrow sample.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Hoyle and Randall (1967) continued						Problem Recognition, Problem Analysis, Group Participation, Adminstrator Action, Administrator Evaluation. (L) . Principals with less graduate training in elementary education significantly higher on subscales of Problem Analysis, Group Participation, and Administrator Action. (M) . No difference in problem attack behavior of principals having more or less undergraduate training in elementary education. (L)	

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Indelicato (1977)	. Gender . Administrative Experience . Personality	Rokeach Dogmatism Scale (RDS) (Completed by subjects)	Leadership style	Profile of a School - 3 (POS - 3) (Completed by faculties of subjects)	50 principals in Massachusetts	. No difference between scores of men and women on POS - 3. (M) . No relationship between years of administrative experience and behavior. (M) . No relationship between RDS scores and behavior. (M)	- No multivariate techniques used.
Koch (1967)	. Age . Experience in education . Amount of training in educational administration	Graduate student records, University of Illinois	Effort to improve professional performance of staff	Executive Professional Leadership Questionnaire (EPLQ)	28 principals who had received training in educational administration at University of Illinois	. Significant negative relationship between amount of training in educational administration and EPL. (M) . No significant relationship between EPL and principal age or experience. (M)	- No multivariate techniques used. - Narrow sample.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Mangee (1975)	. Gender . Age . Amount of training in educational administration		Helping Behavior of Principal	Teacher Perceptual Questionnaire (Author-developed instrument, completed by faculties of subjects)	20 elementary schools in 6 county Detroit area	. No significant relationship between either sex or age and principal helping behavior. (L) . Principals with training beyond master's degree significantly higher in helping behavior. (L)	- Narrow sample. - Unknown quality of author developed instrument. - No multivariate techniques used.
Ringrose (1977)	. Gender . Amount of training in educational administration		Principal use of different power bases	Power Base Questionnaire (Author developed instrument completed by faculties of subjects)	20 schools in Connecticut	No difference in principal use of different power bases associated with principal gender or level of training. (L)	- Narrow sample. - Unknown quality of Power Base Questionnaire. - No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Behavior	Behavior Instrumentation	Sample	Findings	Evaluative Comments
Van Meir (1971)	Gender		Leadership style	Leader Behavior Description Questionnaire-Form XII (LBDQ-XII) (Completed by 7 teacher sample from faculty of each principal)	25 principals randomly drawn from suburban Chicago school districts	Mean LBDQ-XII scores of women significantly higher than men's on composite measure and on subscales of Persuasiveness, Demand Reconciliation, Role Assumption, and Predictive Accuracy. (M)	- Small, narrow sample. - No multivariate analysis used.

Table 2

Descriptions of Research on Principal Antecedents - Organizational Variables Relationships

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Anderson (1965)	. Gender . Age . Amount of administrative experience . Personality	16 PF Inventory	Organizational Climate	Organizational Climate Description Questionnaire (OCDQ) (Completed by faculties of subjects)	Principals of 81 elementary schools drawn randomly from 154 elementary schools from member districts of the Metropolitan Educational Research and Development Council of the Twin Cities Area of Minnesota	. 3 groups of principals categorized according to degree of their schools' openness differed significantly on 4 personality factors, with principals of more open schools scoring higher on Maturity, Dominance, Self-sufficiency, Considerateness; lower on Timidity. (M) . No significant differences among the 3 groups with regard to age, sex, marital status, amount of administrative experience. (M)	- Scattergun approach to data collection and analysis (270 null and alternative hypotheses tested). +Large sample with fair cross section represented. - No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Bishop (1971)	Personality	Personal Orientation Inventory (POI) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	65 schools in Dade, Duval and Orange Counties, Florida (27 Black principals, 38 White)	. 4 significant correlations among 16 computed between 8 OCDQ subtests and 2 major scales of POI for Black principals. (M) . 10 significant correlations among 16 computed between 8 OCDQ subtests and 2 major scales of POI for White principals. (M) . 5 significant correlations among 80 computed between 8 OCDQ subtests and 10 subscales of POI for White principals. (M)	- Only relationships between OCDQ subtests and POI analyzed. - No analysis of relationship of POI to climate profiles.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Brickman (1970)	Personality	Guilford-Zimmerman Temperament Scale (GZTS) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	20 schools "volunteered" by their principals from Orange County, CA. The principals met certain experience and school size criteria.	. Each of the 15 principals whose schools were categorized as having open or autonomous climates scored above the mean on the GZTS, indicating that they had "positive" personalities. (L) . No significant correlations between omnibus measure on GZTS and any of the OCDQ subtests. (L) . 11 of 80 correlations between GZTS subscales and OCDQ subtests reached significance. (L)	- Volunteer nature of sample. - Small sample, geographically restricted.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Chaplain (1976)	. Age . Amount of experience in education . Amount of total administrative experience . Amount of experience in present school . Level of formal education . Personality	Index of Values and Adjustment (Completed by principals)	Organizational Climate	Organizational Climate Description Questionnaire (OCDQ) (Completed by faculties)	25 subjects selected randomly from 124 elementary school principals in Fairfax County, VA.	. No significant differences between principals of more open and less open schools on Index of Values and Adjustment. (M) . No difference between principals of more open and less open schools with respect to experience variables or level of formal education. (M) . Principals of more open schools significantly older. (M)	- No multivariate analysis used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Edgecombe (1968)	Personality	16 Personality Factor Inventory (16 PF) (Completed by principals)	Faculty morale	Purdue Teacher Questionnaire (PTO) (Completed by faculties)	70 principals in Northeast Ohio	Only 5 significant correlations among 160 computed between 16 principal personality variables and 10 dimensions of faculty morale. (L)	- Sample likely biased in that only 70 of 178 invited schools participated.
Ernst (1965)	. Gender . Age . Amount of experience in education . Amount of experience as an administrator in present school . Amount of formal education . Personality	. Index of Values & Adjustment (IVA) . Test for Empathy (TFE) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	156 elementary schools from 4 Florida counties	No significant relationships found between school climate openness and any of the antecedents. (M)	+ Large, fairly well distributed sample. - No multivariate analysis used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Esporite (1971)	. Gender . Age . Amount of experience in education . Length of tenure in school . Compatibility with faculty with respect to dogmatism	Rokeach Dogmatism Scale (Completed by principals and faculties)	Organizational Climate	OCDQ (Completed by faculties)	22 schools from an Ohio school district	. No significant difference in climates of schools administered by men and those administered by women. (L) . No significant difference in climates of schools administered by principals who were older than the majority of their faculties and those administered by principals who were younger than the majority of their faculties. (L) . No significant difference in climates of schools administered by principals who have more experience than the majority of their faculties and those who have less. (L)	- Small, restricted sample. - No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Esporite (1971) Continued						. No significant relationship between compatibility of principals with faculties with respect to dogmatism and organizational climate. (L)	
Farber (1968)	. Gender . Age . Amount of experience in education . Personality	Rokeach Dogmatism Scale (RDS) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	31 schools in the Detroit district	Principal gender, age, amount of experience in education, and RDS scores not significantly related to either closedness of climate or to any of the OCDQ subtests. (One exception: principal RDS scores significantly and negatively related to Production Emphasis subtest of OCDQ). (L)	- Small, restricted sample. - No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Ford (1966)	Personality	Personal Orientation Inventory (POI) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	42 schools in central New York	. Of 96 correlations between 8 OCDQ subtests, only eight were significant. (For total sample of 42). (M) . Principals of 5 most open climate schools significantly higher than principals of 5 most closed climate schools on Time Competence, Inner Directedness, Self Acceptance, Constructive View of Nature of Man, Acceptance of Aggression, Capacity for Intimate Contact. (M)	+ Fairly wide sample.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Gross and Trask (1976)	. Gender . Age . Elementary school teaching experience		. Teacher professional performance . Teacher morale	Author developed scales (Completed by faculties)	175 principals in 41 cities having populations over 50,000 in 1960	. No significant relationship between teacher professional performance and principal age or gender with other antecedents controlled. (H) . Significant positive relationship between teacher professional performance and amount of principal experience as an elementary teacher. (H) . No significant relationship between teacher morale and principal gender, age, or amount of elementary teaching experience. (H)	+ Broad sample. + Multivariate analysis used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Kelly (1972)	. Origin (Appointed from inside or outside district) . Length of tenure in school		. Organizational Climate . School adaptibility	. OCDQ (Completed by faculties) . Adaptibility Adjective Check List	28 schools from Suffolk community, New York	. Significant difference between school climates of principals from outside and inside district on only two OCDQ subtests-Hindrance and Consideration. (M) . Greatest difference in school climate was between principals of outside origin and short tenure and principals of outside origin and long tenure with the former group having the most open climates. (M) . Schools administered by principals of long tenure most adaptible. (M)	- Narrow sample

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Levy (1968)	Personality	. Rokeach Dogmatism Scale (RDS) . Opinionation Scale (OS) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	68 schools in 7 elementary school districts in suburban area of northern Illinois	No significant relationship of RDS and OS to OCDQ climate profiles or to any of the 8 OCDQ subtests. (M)	+ Large comprehensive sample.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
McLeod (1969)	. Gender . Age . Amount of teaching experience . Amount of administrative experience		Organizational Climate	OCDQ (Completed by faculties)	55 schools in a large suburban Colorado district	. Female principals tended to operate more open schools but no statistical test employed. (L) . No significant relationship between principal age and school climate. (L) . Significant positive relationship between amount of principal teaching experience and openness of climate. (L) . Significant negative relationship between amount of principal administrative experience and openness of climate. (L)	- Large but restricted sample. - No multivariate analysis used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Melnick (1970)	Personality	Rokeach Dogmatism Scale (RDS) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	24 elementary school principals scoring at the extremes of the RDS (12 high, 12 low) from a group of 52 randomly selected principals in Southwest Ohio	No significant difference between school climates of principals high in dogmatism and school climates of principals low in dogmatism, either in climate profiles or any of the eight OCDQ subscales. (H)	+ Fairly wide sample. + No difference findings strengthened by use of principals scoring at extremes of RDS.
Muhm (1968)	Personality	Occupational characteristics Index (OCI) (Teachers' description of their principals' characteristics)	Organizational Climate	OCDQ (Completed by faculties)	10 principals in one district in Central Illinois	Of 168 correlations between 21 occupational (or personality) characteristics and the 8 OCDQ subscales only 15 were significant at .10 level. (L)	- High likelihood of measurement dependency in that both the OCI and OCDQ were completed by teachers. - Very small and restricted sample.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Murphy (1966)	Personality	16 Personality Factor (16PF) (Completed by principals)	Organizational Climate	OCDQ (completed by faculties)	20 elementary schools in a suburban district in a metropolitan area of Georgia, classified as either open or closed from a large group of 64 schools	There were significant differences between personality scores of principals of open climate schools and closed climate schools on 4 of 16 subscales of 16PF. Principals of closed climate schools significantly higher on Permissiveness, Self Sufficiency, Conservativeness, Self Control. (M)	- Inadequate discussion of surprising direction of differences in personalities of principals of open and closed schools.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Phillips (1969)	Personality	Edwards Personal Preference Schedule (EPPS) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	25 schools in Fresno, CA.	Principals of "more open" schools differed significantly from principals of "less open" schools on one of the 15 subscales of the EPPS. There were six significant correlations of 120 computed between 15 EPPS subscales and 8 OCDQ subtests. (M)	- Small, restricted sample.

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Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Powell (1976)	. Age . Amount of experience in education . Amount of total administrative experience . Amount of administrative experience in present school . Level of formal education . Personality	Index of Values and Adjustment (IVA) (Completed by principals)	Organizational Climate	Organizational Climate Description Questionnaire (OCDQ) (Completed by faculties)	15 principals in Carrol County, Maryland	. No significant difference between scores of principals of more open and less open schools on IVA. (L) . No significant difference between principals of more open and less open schools with respect to age, experience variables, or level of formal education. (L)	- Narrow sample. - No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Raspa (1976)	. Age . Amount of experience in education . Amount of total administrative experience . Amount of administrative experience in present school . Level of formal education . Personality	Index of Values and Adjustment (Completed by principals)	Organizational Climate	Organizational Climate Description Questionnaire (OCDQ) (Completed by faculties)	22 principals in St. Mary's County, MD.	. No significant difference between scores of principals of more open and less open schools on IVA. (L) . No significant difference between principals of more open and less open schools with respect to amount of experience in education or total amount of administrative experience. (L) . Principals of more open schools significantly younger. (L) . Principals of more open schools had significantly less experience in present school. (L)	- Narrow sample. - No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Reitz (1973)	. Gender . Age . Experience in education . Level of formal education . Personality	Personal Orientation Inventory (POI) (Completed by principals	Organizational Climate	Organizational Climate Description Questionnaire (OCDQ) (Completed by faculties)	77 principals of elementary schools in Northwest Ohio	. Only 7 significant correlations among 96 computed between 12 dimensions of the POI and 8 subscales of the OCDQ. (L) . No significant difference among 3 groups of principals categorized according to school openness on either of the major POI dimensions - Inner Directedness and Time Competence. (L) . No significant difference among 3 groups of principals categorized according to school climate openness with respect to age, gender, experience in education, or level of formal educatio.. (L)	- Probable bias in study in that only 77 of 200 invited schools participated in the study. - No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Rice (1968)	. Gender . Age . Years of experience in education		Organizational Climate	OCDQ (Completed by faculties)	35 schools from one Southern California District	No significant relationship between organizational climate of school and principal gender, age, or years of experience in education. (L)	- Restricted sample. - No multivariate techniques used.
Shea (1970)	Personality	Rokeach Dogmatism Scale (RDS) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	10 schools from one school district	No significant correlations between principals' scores on RDS and any of the OCDQ subtests. (L)	- Very small and restricted sample.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Smith (1966)	. Gender . Amount of teaching experience . Amount of administrative experience . Amount of training in educational administration		Organizational Climate	OCDQ (Completed by faculties)	17 schools from 9 suburban Chicago districts	. Principal gender not significantly correlated with any of the 8 OCDQ subtests. (L) . Amount of teaching experience not significantly correlated with any of the 8 OCDQ subtests. (L) . Amount of administrative experience significantly correlated with 2 of 8 OCDQ subtests (positively with Production Emphasis and negatively with Thrust). (L) . Amount of training in educational administration significantly and negatively correlated with 1 of 8 OCDQ subtests (Thrust). (L)	- Small sample. - No multivariate techniques used.

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Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Stolz (1971)	Personality	The F Scale for authoritarianism (Completed by principals)	. Innovativeness . Organizational Climate	. Ratings by Central Office personnel . OCDQ (Completed by faculties)	41 schools in the Spokane, Washington school district	. Authoritarianism scores of principals of 14 schools rated highest on innovation significantly lower than authoritarianism scores of principals of 14 schools rated lowest on innovation. (M) . No significant correlation between principals' authoritarianism and any of the 8 OCDQ subtests. (M)	+ Large although geographically restricted sample. + Strong interrater agreement on school innovativeness.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Tirpak (1970)	. Age . Amount of formal education . Personality	16PF (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	49 principals in two counties in Northeastern Ohio	. No significant differences in age or amount of formal education of principals of schools having different climates. (M) . Principals of open climate schools significantly higher on following personality factors: Warm Hearted-Sociable; Emotional Stability; Enthusiasm-Cheerfulness; Determination-Conscientiousness; Desire for Experimentation; Group Dependency; Self Control. (M)	- No multivariate techniques used.

Author	Antecedent	Antecedent Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Winter (1968)	Gender		Organizational Climate	OCDQ (Completed by faculties)	30 randomly selected schools in middle Tennessee	Proportion of men and women principals in open climate schools not significantly different from proportion of men and women principals in closed climate schools. (M)	- Somewhat restricted sample.

Table 3

Descriptions of Research on Principal Behavior - Organizational Variables Relationships

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Appel (1977)	Leadership Style	Leader Behavior Description Questionnaire (LBDQ) (Completed by faculties)	School Innovativeness	Program Change Questionnaire (Completed by principals)	40 schools randomly selected from 937 cities with population under 50,000	Significant positive correlation between Intiating Structure subscale of LBDQ and amount of program change. (H)	
Brickner (1971)	Leadership Style	LBDQ	Organizational Climate	OCDQ (Completed by faculties)	16 schools in Grand Forks, ND	10 of the 16 correlations between the two LBDQ subscales and the eight OCDQ subscales were statistically significant. (L)	- Measurement dependencies probable source of significant relationships. - Narrow sample.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Cook (1965)	Leadership Style	Leader Behavior Description Questionnaire (LBDQ) (Completed by faculties)	Organizational Climate	OCDQ (Completed by faculties)	20 schools from 6 districts in Camden County, New Jersey	There were significant differences in LBDQ scores among principals classified according to climates of their schools. Principals in climates tending toward openness were higher in Initiating Structure and Consideration. (L)	- Measurement dependencies inherent in data collection procedures and nature of the instruments.
DeHart (1976)	Efforts to improve staff performance	Executive Professional Leadership Questionnaire (EPLQ) (Completed by faculties)	. Teacher Morale	. Pride in school Questionnaire (Author Developed; completed by faculties)	70 Texas schools, stratified by district size.	. Significant correlation between EPLQ and teacher morale. (L)	- Findings a likely artifact of measurement dependencies.
			. Organization Climate	. Climate Questionnaire (Author developed; completed by faculties)		. Significant relationship between EPLQ and the climate questionnaire. (L)	

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Dugan (1967)	Communication	Administrative Communication Rating Scale (ACRS) (Completed by faculties)	Organizational Climate	OCDQ (Completed by faculties)	48 schools in upper New York state	. Principals' scores on ACRS positively and significantly correlated with Open, Autonomous, and Familiar school climate similarity scores. (L) . Principals' ACRS scores negatively and significantly correlated with closed climate similarity scores. (L) . Principals' scores on ACRS significantly correlated with six of the eight subtests of OCDQ. (L)	- Measurement dependency inherent in procedures.
Feitler (1979)	Leadership Style	Leader Behavior Description Questionnaire - For XII (LBDQ XII) (Completed by faculties)	Organizational Climate	Profile of A School (POS) (Completed by faculties)	23 schools from New York urban districts	28 of 60 correlations between subscales of LBDQ XII and subscales of POS statistically significant. (L)	- Finding likely artifacts of measurement dependency.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Georgia State Department of Education (1975)	Specific task performance ("competencies")	Questionnaire developed by authors (Principals' effectiveness in performing various administrative tasks as rated by pupils professional staff, community members, parents, external observers, and principals themselves)	Satisfactions and attitudes of pupils, professional staff, and parents	Questionnaires developed by authors (Completed by student, professional staff, and parents)	35 Georgia schools (elementary sample only)	Average correlation of of .18 between ratings of principal performance and satisfaction/ attitude variables. (L)	- Measurement dependency inherent in instrumentation and procedures. - Massive amount of data collected with no theoretical guidance. - No controls used for pupil socio-economic status.
Green (1977)	Leadership Style	LBDQ (Completed by faculties)	School Innovativeness	Innovation check list (Completed by principal) and Interview Questionnaire on implementation effectiveness (Administered to teachers)	40 schools from 27 Michigan districts	Significant positive relationship between Initiating Structure subscale of LBDQ and innovativeness. (M)	- Only 27 of 60 invited districts participated. - Teacher rather than school used as unit of analysis.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Gross and Herriot (1965)	Efforts to improve professional performance of staff	Executive Professional Leadership Questionnaire (EPLQ) (Completed by faculties)	Morale	Author developed questionnaire (Completed by faculties)	175 principals in 41 cities with populations over 50,000.	Significant positive relationship between EPL and morale. (L)	- Measurement dependency inherent in procedures and instruments.
Guy (1969)	Efforts to improve staff performance	Executive Professional Leadership Questionnaire (EPLQ) Completed by faculties)	Organizational Climate	OCDQ (Completed by faculties)	19 schools in Alabama	No significant relationship between principal's EPL and openness of organizational climate. (L)	- Narrow sample. - Measurement dependency inherent in procedures.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Hagans (1969)	Inter-personal Behavior	Fundamental Interpersonal Relations Orientation (FIRO-B) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	116 schools randomly selected from 71 Iowa school districts	. Only 2 significant bivariate correlations of 48 computed between 6 subscales of FIRO-B and 8 subtests of OCDQ. (H) . Significant multiple correlation found between combinations of FIRO subscales and 3 OCDQ subtests. (H) . Of 48 statistical tests there were 5 significant differences among OCDQ subtest scores of principals grouped according to 3 levels of six FIRO-B subscales scores. (H)	+ Large sample, drawn from good cross section of schools.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Johnson (1978)	Leadership Style	Principal Leadership Assessment Questionnaire (PLA) (Completed by faculties)	Teacher Job Satisfaction	Job Satisfaction Survey (Completed by faculties)	28 Individually Guided Education IGE) schools	Two of four subscales of PLA (Interaction Facilitation and Goal Emphasis) significantly related to teacher job satisfaction. (L)	- Measurement dependency inherent in instrumentation and procedures.
Mangee (1975)	Helping Behavior	Author developed questionnaire (Completed by faculties)	Organizational Climate	Author developed questionnaire (Completed by faculties)	20 schools from 6 county Detroit area	No difference between school climate scores of schools where principal rated high in helping behavior and schools where principals rated low. (L)	- Narrow sample. - Measurement dependency inherent in procedures. - Questionable quality of instruments.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Moyle (1979)	Leadership Style	Author-developed questionnaires and interview schedules administered to principals and their staffs	. Effectiveness of functioning of school cabinet . Teacher job satisfaction	Author developed questionnaires and interview schedules administered to principals and their staffs	Principals in 8 diversely located Individually Guided Education (IGE) schools	. Members of school cabinets viewed principal instrumental (task oriented) behavior as a positive leadership attribute. (L) . Supportive (relationship) leadership behavior viewed as important to teacher job satisfaction and effective functioning of cabinet. (L)	- Schools of a select nature. - Small sample. - Measures and procedures mostly subjective. - No statistical tests used. - Measurement dependency likely.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Nelson (1972)	Leadership Style	Perception of Administrative Style of the Principal (PASP) (Author developed; completed by teachers)	Organizational Climate	OCDQ (Completed by faculties)	37 schools assumed to be representative of rural schools in Indiana	PASP significantly correlated with 7 of the 8 OCDQ subtests. (L)	- PASP is unstandardized instrument. - Measurement dependency inherent in procedures.
Pennebaker (1969)	Leadership Style	Administrative subscales of OCDQ (Completed by faculties)	Teacher Morale	Purdue Teacher Opinionnaire (PTO) (Completed by faculties)	27 schools in metropolitan Detroit area	Two of four administrative subscales of OCDQ (Thrust and Consideration) significantly correlated with teacher morale. (L)	- Measurement dependency inherent in procedures.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Remsen (1974)	Leadership Style	Leader Behavior Description Questionnaire Form XII (LBDQ-XII)	School innovativeness as indicated by adoption of individualization of instruction	. Jury of experts identified 15 high adopters and 15 low adopter schools . Individualization Index (Author developed) (Administered to teachers)	30 schools in Suffolk County, New York	. Significant difference in 7 of 12 LBDQ XII subscales of principals of high adopter and principals of low adopter schools. (M) . Significant correlation between Individualization Index and 8 of 12 subscales of LBDQ-XII. (L)	+ Reliability of author developed instrument well established. - Possibility of measurement dependency between LBDQ XII and Individualization Index. - Narrow sample.
Ringrose (1977)	Use of different power bases	Power Base Questionnaire; (Completed by teachers) (Author developed)	Organizational Climate	Profile of a School (POS) (Completed by teachers)	20 schools in Connecticut	. Principals used expert or legitimate power bases almost exclusively. (H) . Significantly higher POS scores in schools where principals used mostly expert power than in those where principals used mostly legitimate power. (L)	- Probable measurement dependency between Power Base Questionnaire and POS.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Sidotti (1976)	Source of Authority	Principal Staff Authority Inventory, administered to teachers (Author Developed)	. Teacher loyalty . Teacher job satisfaction . Teacher alienation	Author developed questionnaires administered to teachers	40 schools in five New Jersey counties	Principals who scored high in informal authority and low in formal authority had teachers who were significantly lower in alienation than did principals who were low in informal authority and high in formal authority. (L)	- Likelihood of measurement dependency being source of findings. - Unknown reliability of author-developed instruments.
Smith (1975)	Management Style	Profile of a School subscales: climate, leadership, trust. Composite score (Completed by faculties)	Teacher Morale	Purdue Teacher Opinionnaire (PTO) (Completed by teachers)	17 schools from 4 California districts	Significant positive correlation between composite POS and total PTO. (L)	- Only 17 of 37 invited schools participated. - Likelihood of measurement dependency being scource of findings.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Vick (1975)	Management Style	Teacher Centered Management Style Questionnaire (adapted from previously developed instrument) (Completed by teachers)	. Organizational Climate . School Innovativeness	. Organizational Climate of Individual School Questionnaire (OCIS) (Author developed) (Completed by faculties) . Innovation checklist completed by central office personnel	50 schools in San Bernardino County, California	. Ten principals who were highest in teacher centered mangement style had significantly more favorable climates than lowest in teacher centered management style. (L) . Significant positive relationship between degree of principal's teacher centered management style and school innovativeness. (M)	- Likelihood of measurement dependency being source of significant findings. - Unknown reliability of management style instrument.

Author	Principal Behavior	Behavior Instrumentation	Organizational Variable	Organizational Variable Instrumentation	Sample	Findings	Evaluative Comments
Walker (1975)	Leadership Style	Leader Behavior Description Questionnaire (LBDQ) (Completed by faculties)	Teacher Morale	Purdue Teacher Opinionnaire (PTO) (Completed by faculties)	50 schools in Southern Mississippi	Significant positive relationship between both the Initiating Structure and Consideration subscales of LBDQ and the composite PTO scores. (L)	- Measurement dependency likely source of significant findings.
Wiggins (1972)	. Interpersonal Behavior . Leadership Style	. Fundamental Interpersonal Inventory (FIRO) (Completed by principal) . Organizational Orientation Inventory (ORI) (Completed by principals)	Organizational Climate	OCDQ (Completed by faculties)	35 schools in Southern California	No significant relationships found. (M)	- Restricted sample.

Table 4

Description of Research on Organizational - Variables - Student Outcomes Relationships

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Boyd (1970)	Organizational Climate	OCDQ (Completed by faculties)	Morale	Student Morale Scale (SMS) (Completed by 6th grade students)	28 schools from 7 districts in eastern and northeastern Ohio	SMS not significantly related to OCDQ total climate scores or to any of the 8 OCDQ subtests. (M)	- Low reliabilities reported for SMS.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Brook-over (1978)	School social climate	Questionnaire developed by authors, measuring various dimensions of school social climate as perceived by pupils, teachers, and principals	Academic achievement	Michigan assessment program tests	Three samples used: A Michigan statewide sample of 68 schools; 61 white schools from the statewide sample; 30 Black schools, 7 from the statewide sample plus 23 drawn randomly from Michigan Black majority schools	. Combined climate measures accounted for highly significant proportions of variance in student achievement, especially in Black schools. (H) . Student climate variables best predictors among climate measures of student academic achievement. (H) . Teacher climate variables significant predictors of academic achievement after controls for other climate variables. (H) . Principal climate variables not significant predictors of student academic achievement with other independent variables controlled. (H)	+ Controls used for student body socio-economic status and racial composition. - Multivariate analyses used.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Crumpton	Organizational Climate	OCDQ (Completed by faculties)	Reading Achievement	Different standardized tests used at different grade levels	27 schools from Chicago Public Schools	No relationship between reading gain scores and any of the 8 OCDQ subtests. (M)	+ Small sample, but procedures were used to get a cross section of the Chicago district. + Multivariate procedures employed to control for dependencies among 8 OCDQ subtests. - Although data were collected on inner-city vs outer city location of schools, these were not used as a control for school socio-economic status.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Georgia State Department of Education	Teacher and student and parent satisfactions/ attitudes	Questionnaires developed by authors (Completed by professional staff, pupils, and parents)	. Academic achievement . Average daily attendance	Georgia Statewide Achievement Test	35 Georgia schools (Elementary sample only) from Thomas and Dekalb counties.	Average correlation of .38 between satisfactions/attitudes and outcome variables. (L)	+ Student body socio-economic status and racial composition not controlled. + Multivariate analyses not employed.
Guy (1969)	Organizational Climate	OCDQ (Completed by faculties)	Academic Achievement	. Stanford Achievement Test . Iowa Test of Basic Skills	19 schools in Muscogee County district of Georgia	No significant relationship between openness of school climate and student achievement gains between 4th and 6th grades in reading, language, or arithmetic. (M)	- Small, restricted sample.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Jones (1973)	Bureaucratization	School Organizational Inventory (SOI)	Attitudes toward school	Pupil Attitude Questionnaire (PAQ)	7 Title I schools in Oklahoma (SOI completed by all teachers in the 7 schools. PAQ completed by random sample of 50 6th grade pupils from most bureaucratized school and 50 6th grade students from least bureacratized schools)	. No significant difference in pupils' feelings of powerlessness in schools classified as relatively high vs schools classified as relatively low in hierarchy of authority. (M) . No significant difference in pupils' feelings of self-estrangement in schools classified as relatively high vs schools classified as relatively low in use of rules and regulations. (M) . Significant difference found in feelings of isolation of students in schools classified as relatively high vs schools classified as relatively low in impersonalization (Direction was opposite from that hypothesized; more student isolation found in schools low in impersonalization.) (M)	+ Instruments previously well standarized. - Extremely small, restricted sample.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Madden (1971)	Organizational Climate	OCDQ (Completed by faculties)	Academic Achievement - Language Arts	Iowa Test of Basic Skills, Language Arts Subtests	. 6 schools, 3 identified as most open and 3 identified as most closed among 16 inner-city schools in Kansas City. . Achievement measures were from 64 randomly drawn 6th grade pupils from each category of schools.	No significant difference between achievement scores of students in open climate schools and scores of students in closed climate schools, either in total language arts, or any of the language arts subtests. (M)	- Very small sample. + Socio-economic status controlled in that all schools were inner-city.
Maxwell (1967)	Organizational Climate	OCDQ (Completed by faculties)	Academic Achievement	Reading scores from Science Research Associates Achievement Test (SRA)	10 inner-city schools in Flint, Michigan	2 significant relationships among 8 correlations between student reading achievement and 8 OCDQ subtests: a positive relationship between principal Consideration and reading scores; a negative relationship between teacher Disengagement and reading achievement scores. (L)	- Small, highly restricted sample.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Miller	Organizational Climate	OCDQ	Academic Achievement	Iowa Test of Basic Skills (ITBS)	3rd through 6th grade students in 29 schools in a Minnesota urban district	Only 2 significant results among 64 tests of relationships between 8 OCDQ subtests and 8 measures of academic achievement yielded by ITBS. (H)	+ Controls used for students' IQ and socio-economic status.
Reilly (1973)	Organizational Climate	OCDQ (As adapted by author) (Completed by faculties)	Academic Achievement	Michigan Assessment Battery (MAB)	41 schools randomly selected from schools which had participated in the 1970-71 Michigan Educational Assessment Program	. There was a significant multiple correlation between OCDQ subscales and composite student achievement for three of the four OCDQ factor structures. (M) . The meaningfulness of the relationships between the OCDQ and student achievement was made questionable by the finding that simple correlations between the variables were frequently in a direction opposite from the one predicted. (H)	- Sample bias likely in that only 41 of 120 invited schools participated in the study. + Acceptable reliabilities for MAB have been established. - Small amount of variance in climate scores.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Rice (1968)	Organizational Climate	OCDQ (Completed by faculties)		California state mandated achievement tests (Two year achievement averages for upper grades)	35 schools from a Southern California district, half being from the lowest socio-economic quartile based on Shevky-Bell Social Area Analysis.	. No significant relationship between student achievement and organizational climate. (M) . No significant relationship between student achievement and any of the 8 OCDQ substests. (M)	+ Control for socio-economic status of schools used. - Restricted sample.
Rooney (1976)	Organizational Climate	OCDQ	. Student Affect . Student Achievement	. Pennsylvania Educational Quality Assessment Inventory (EQA) . Pennsylvania Educational Quality Assessment Inventory (EQA)	32 schools randomly selected from 80 Pennsylvania schools which had been previously tested by the EQA in Northeastern Pennsylvania	. 2 significant correlations among 56 computed between 7 measures of student affect and 8 subtests of OCDQ. (M) . No significant correlations among 32 computed between 4 measures of student achievement and 8 subtests of OCDQ. (M)	- Psychometric properties of EQA not presented.

Author	Organizational Variable	Organizational Variable Instrumentation	Student Outcome	Student Outcome Instrumentation	Sample	Findings	Evaluative Comments
Sellinger (1971)	Organizational Climate	OCDQ (Completed by faculties)	Test Anxiety	Anxiety Scale for Children (ASC)	4 "most closed" climate schools and "most open" climate schools of 23 schools of New London County, Connecticut	No significant difference in test anxiety of students in closed climate and open climate schools. (M)	- Small, restricted sample.
Thayer (1971)	Organizational Climate	OCDQ (Completed by faculties)	Classroom Climate	Classroom Climate Organizational Questionnaire (COCDQ) (Author developed Instrument was designed to parallel OCDQ items and substests)	78 5th and 6th grade classroom in 16 schools in 16 different districts in Southern California	. With school as unit of analysis there were 8 significant correlations of 64 computed between the 8 OCDQ subtests and the 8 COCDQ parallel subtests. (M) . With the classroom as unit of analysis there were 3 significant correlations of 64 computed. (M)	- No reliabilities reported for COCDQ.

Table 5

Descriptions of Research on Principal Behavior - Situation Interactions

Author	Principal Behavior	Principal Behavior Instrumentation	Situational Variable	Situational Variable Instrumentation	Outcome	Outcome Instrumentation	Sample	Results	Evaluative Comments
McNamara (1967)	Leadership Style	Least Preferred Co-worker (LPC) (Completed by principals)	Group acceptance of principals (As index of situational favorableness for leader)	Group Acceptance Scale (GA) (Completed by principals)	Ratings of school effectiveness by central office personnel and teachers	Author developed rating scales	32 schools in Edmonton, Alberta	. Direction of correlations between Principal LPC and school effectiveness did not vary with GA in a fashion predicted by the Fiedler model. (M) . Author presented data to suggest that failure of findings to conform to predictions may have been due to his own mislocation of elementary schools on the situational favorableness continuum.	- Narrow sample.

Author	Principal Behavior	Principal Behavior Instrumentation	Situational Variable	Situational Variable Instrumentation	Outcome	Outcome Instrumentation	Sample	Results	Evaluative Comments
McNamara (1968)	Leadership Style	Least Preferred Co-worker (LPC) (Completed by principals)	Group acceptance (As index of situational favorableness for leader)	Group Acceptance Scale (Completed by principals)	Ratings of school effectiveness by school officials	Author developed rating scales	171 schools in province of Alberta	Pattern[1] of correlations between principal LPC and school effectiveness under different conditions of favorableness did not conform to predictions of Fiedler model. (H)	+ Large, widely representative sample.

[1]Findings reported in this table pertain only to McNamara's subsample of elementary school principals; however his findings for secondary principals were similar.

Author	Principal Behavior	Principal Behavior Instrumentation	Situational Variable	Situational Variable Instrumentation	Outcome	Outcome Instrumentation	Sample	Results	Evaluative Comments
Mellor (1974)	Leadership Style	Least Preferred Co-worker (LPC) (administered to principals)	Fiedler's situational favorableness	. Group Atmosphere Scale (GA) (Completed by faculties) . Position Power Questionnaire (PPQ) (Completed by principals) . Task Structure Scale (TSS) (Completed by 20% of faculties) (Scores from above instruments combined for each school to place the school in one of eight categories, or "octants" of situational favorableness for leader)	. Student achievement. . School environment.	Iowa Test of Basic Skills (ITBS) (Composite scores) (From 20% of students) School Environment Scale (SES) (From 20% of faculties)	44 Rhode Island principals	. Direction of correlation between LPC scores and outcome measures in different categories of favorableness generally conformed to Fiedler's predictions but none of them were statistically significant. (H) . Significant positive relationship between principals' LPC scores and consideration scale of LBDQ. (H) . Non-significant negative relationship between principals' LPC scores and Initiating Structure Scale of LBDQ. (H)	+ Controls used for student socio-economic status and I.Q.

Author	Principal Behavior	Principal Behavior Instrumentation	Situational Variable	Situational Variable Instrumentation	Outcome	Outcome Instrumentation	Sample	Results	Evaluative Comments
Powers (1976)	Kind of power base used in relations with teachers	. Inventory of principals' perceptions of frequency of their use of different types of power bases (i.e. position, expertise) (Adapted by author) . Inventory of Superintendents' Perceptions of frequency with which their respective supordinate principals used different types of power bases (Adapted by author)	Kind of power base used by superintendent	. Inventory of superintendents' perceptions of frequency of their own use of different types of power bases (Adapted by author) . Inventory of principals' perception of frequency with which their respective superintendents used different types of power bases (Adapted by author)	Teacher job satisfaction and loyalty to principal	. Bullock's Job Satisfaction Scale (Completed by faculties) . Inventory of teacher loyalty to principal (Adapted by author) (Completed by faculties)	37 principals randomly selected from North Carolina Education Directory and matched with their respective superintendents	. Concordance between principals' and superintendents' respective self perceptions of use of power bases not significantly related to loyalty or job satisfaction of teachers. (M) . Concordance between principals' perceptions of own and superintendents' use of power bases significantly related to both teacher loyalty to principal and teacher job satisfaction. (M)	- No data provided regarding psychometric properties of power base inventories.

Author	Principal Behavior	Principal Behavior Instrumentation	Situational Variable	Situational Variable Instrumentation	Outcome	Outcome Instrumentation	Sample	Results	Evaluative Comments
Powers (1976) Continued								Concordance between superintendents' perceptions of own and principals' use of power bases significantly related to teacher loyalty to principal, but not to teacher job satisfaction. (M)	
Rafalides (1974)	Helping Supervisory behavior	Questionnaire developed by author and administered to faculties	Principal hierarchical influence	. Hierarchical Influence Questionnaire (HIQ) (Administered to faculties) . Pelz's inventory of hierarchical influence	. Teacher satisfaction with principal . Teacher Morale	. Questionnaire developed by author, administered to faculties . Questionnaire adapted by author from OCDQ, administered to faculties	46 New Jersey principals	Relationship of principal helping behavior to teacher satisfaction and morale was positive regardless of degree of principals' hierarchical influence. (L)	- Measurement dependencies inherent in nature of the instruments and in teachers responding to all instruments.

Author	Principal Behavior	Principal Behavior Instrumentation	Situational Variable	Situational Variable Instrumentation	Outcome	Outcome Instrumentation	Sample	Results	Evaluative Comments
Singe (1975)	. Leader Motivation . Leadership Style	. Least Preferred Co-worker Scale (LPC) (Completed by principals) . Leader Behavior Description Questionnaire (LBDQ) (Completed by faculties)	Fiedler's situational favorableness	. Group Atmosphere Scale (GA) (Administered to principals and unit leaders) . Co-worker Preference Scale (CPS) (Administered to principals and unit leaders) . Task Structure Scale (TSS) (Administered to principals, unit leaders, and teachers) . Position Power Scales (Administered to principals and unit leaders) (Each school placed in one of eight categories of favorableness, based on scores from preceding instruments)	Group effectiveness	. Group Inventory (GBI) (Completed by faculties) . Work Group Effectiveness Inventory (Completed by faculties)	Principals of 40 Individually Guided Education (IGE) schools in Connecticut	Resulting pattern of correlations between principal behavior and measures of effectiveness in the different categories of situational favorableness did not conform to predictions of the Fiedler model. (L)	- Measures of effectiveness highly questionable.

Author	Principal Behavior	Principal Behavior Instrumentation	Situational Variable	Situational Variable Instrumentation	Outcome	Outcome Instrumentation	Sample	Results	Evaluative Comments
Williams and Hoy (1971)	. Leadership Style	Least Preferred Co-worker (LPC) (Completed by principals)	Situational favorableness for leader	. Group Atmosphere Scale (GA) (Completed by principals) . Author adapted questionnaire to assess teacher loyalty to principal	Teacher effectiveness	Ryans Teacher Characteristics for Elementary Teachers (Questionnaire completed by teachers on selves)	42 principals in New Jersey	Support for Fiedler model found, in that correlation between LPC and teacher effectiveness was negative and significant in highly favorable situations, and correlation between LPC and teacher effectiveness was positive (although not significant) in less favorable situations. (H)	

Table 6

Descriptions of Studies of Reputational Effectiveness

Author	Principal Antecedent of Behavior	How Measured	How Success or Effectiveness Determined	Sample	Results
Doll (1970)	General leadership behavior	Interviews of faculties	Deviations of school quality from what social and economic conditions of school community would seem to warrant. A group of "successful" principals were operating schools with fewer problems than conditions suggested; a group of "unsuccessful" principals were operating schools with even more problems than conditions suggested	Unspecified number of inner-city schools	. "Successful" principals took cues for action from the individual school situation - the needs of the pupils, the teachers and the community while "unsuccessful" principals took their cues from the administrative hierarchy. . "Successful" principals were willing to move independently and decisively, had empathy for parents and children, and saw their primary task as helping teachers to teach well, even if it meant clashing with the hierarchy.

Author	Principal Antecedent or Behavior	How Measured	How Success or Effectiveness Determined	Sample	Results
Goetz (1973)	Biographical, Personal, interpersonal, and administrative characteristics	Interviews of the principals, their immediate superiors, teachers, secretaries, parents, students.	Identification by administrative superiors (2 from each of 10 districts)	20 principals from 10 Southern California districts	. Effective principals vary greatly in appearance, age, personality, stature, manner. . Effective principals committed to welfare of children, maintain high standards for self and co-workers, and are people oriented. . Fairness, knowledgability, sense of humor most frequently mentioned personal characteristics of effective principals. . Capacity to allow followers to take initiatives and actions most frequently mentioned inter-personal characteristic of effective principals. . Providing leadership in determining school objectives and needs most frequently mentioned administrative characteristic of effective principals.

Author	Principal Antecedent or Behavior	How Measured	How Success or Effectiveness Determined	Sample	Results
Goldhammer, et al. (1971)	Demographic data, attitudes, beliefs	. Questionnaire completed by subjects . Interview of subjects	Schools were designated as "beacons of brilliance" or "potholes of pestilence by visiting interviewers after their principals had been identified as visibles by officers of state education agencies, presidents of elementary school principals' associations, and universities	National sample of 291 principals from all 50 states, stratified by district type (i.e. urban, suburban, rural)	Principals of outstanding schools ("beacons of brilliance") (a) Did not initially intend to become principals. (b) Placed primary responsibility for students' learning on the school. (c) Had high levels of interpersonal skill. (d) Were willing to combat the hierarchy on behalf of their schools. (e) Were inthusiastic about their work. (f) Were committed to education. (g) Were adaptable. (h) Were able strategists.

Author	Principal Antecedent or Behavior	How Measured	How Success or Effectiveness Determined	Sample	Results
Hemphill, et al.	. Biographical data: age, amount of experience in education; amount of administrative experience; academic preparation; gender	. Questionnaire	Ratings by faculties and administrative superiors	National sample of 232 principals	. Administrative superiors gave higher ratings to women principals. . Teachers' and administrative superiors' ratings negatively correlated with all longevity variables (age, total experience, administrative experience), some to a statistically significant degree. . Correlations between measures of personality and cognitive ability with ratings low and insignificant.
	. Intelligence	. Basic Mental Abilities Test			
	. Professional and general knowledge	. School Administration and Supervision Test; Education in the Elementary School . NTE - Social Studies . NTE - Science and Math			
	. Personality	. 16 PF			

Author	Principal Antecedent or Behavior	How Measured	How Success or Effectiveness determined	Sample	Results
Rejent	Biographical characteristics and history	Interviews of subjects and their associates, faculties, and students; records in institutions	By a jury of recognized educational leaders in Alabama	3 Alabama principals credited with "outstanding success."	Successful principals characterized as intelligent, knowledgeable, having high moral character, and having a high regard for others.
Rousseau	. Undergraduate grade point average . Undergraduate field of study . Number of graduate hours in educational administration, courses, social science courses, and all graduate courses combined. . Number of years of elementary school teaching experience . Number of years of elementary school principalship experience	Information provided by principals and records in files of certification office	Ratings by faculties of principals. 40% of principals rated highest placed in "high success" category; 40% receiving lowest rating placed in "low success" category	64 principals enrolled in administrative certification program at University of Oregon.	No significant difference between high and low success groups on any of the antecedents.